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C. L. Nelson

Jewell, Iowa

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Diagnosing Poultry Diseases

*Dr. C. L. Nelson**

OVER a period of years the poultry industry has grown until it has become an industry of considerable magnitude. Concurrent with this expansion the problem of disease has asserted itself, vexing flock owners as well as others interested in the industry. Poultry growers are showing great concern about the disease problems that may attack their poultry. This is manifested by the fact that there is a trend by flock owners to seek the veterinarian for help and advice on problems relating to poultry maladies.

In view of this fact more practicing veterinarians are trying to render the greatest possible service to their poultry clientele. Veterinarians are beginning to realize that it is just as important to accept calls to visit poultry flocks as it is to answer other routine calls. In some communities the demand has compelled the practitioner to render this service. There is still a reluctance on the part of some practicing veterinarians to do much in the way of poultry disease control or practice. This has forced the flock owner to go elsewhere for help and advice concerning his poultry problems. With the advent of sulfonamides and antibiotics it is quite evident that poultry respond to treatment as well as other livestock. Poultry growers are becoming convinced of the futility of administering drugs, "wormers" and other alleged remedies and preventives offered by itinerant as well as stationary exploiters.

Courses in avian pathology are now being included in the curriculums of various veterinary colleges. This gives the student and graduating seniors a basic education in poultry husbandry and disease control. Poultry growers have demanded that something be done to curtail the increasing death loss in poultry that occurs year after year. If this is going to be accomplished it will have to be done by someone experienced in that field—someone that understands hygiene, sanitation, nutrition and disease problems affecting poultry.

Diagnosing poultry disease should be worked out in a systematic manner. Very few poultry diseases produce symptoms that can be considered diagnostic. For many conditions the symptoms displayed by affected fowl are so similar that they are regarded as useless from the standpoint of differential diagnosis. An accurate diagnosis is contingent upon a thorough examination such as an accurate history, external examination, postmortem examination, microscopic examination of intestinal scrapings, blood smears and culturing.

History

All birds submitted for examination should be accompanied by an accurate history. This history should include the age of the birds, number in the flock, size of house, length of sickness, death loss, something about the ration and medication used, if any. If the birds are in egg production any information concerning the quality of the egg shells or

* Dr. Nelson is located in general practice at Jewell, Iowa. He received his D.V.M. degree at Iowa State College in 1939.

drop in production is important. Any peculiarities or symptoms shown by the birds such as nervous symptoms or respiratory symptoms should be included in the history.

If poults are submitted for examination any information concerning the range or changes in the watering system is essential. A common practice of turkey growers is to substitute an automatic pressure water system for hand water fountains when poults are five to six weeks old. Since turkeys are habit forming and shy, occasionally they will avoid this new equipment. Two days following the change some of the poults will appear droopy and start dying. On the third day the death rate will be high and alarming. These poults are simply dying of thirst. In order to correct the condition it is necessary that the old fountains be returned to their original places and remain until the poults become accustomed to the new equipment. It is quite evident that without this history a diagnosis would be baffling.

External Examination

Often times the only lesions found on birds will be external. This necessitates a thorough external examination before commencing the autopsy. The flock owner should be instructed to submit several birds, some of them being alive. Live birds should be examined for droopiness, lameness, nasal discharge and discoloration about the comb or face. Note the feathering, length of beak and claws, any abnormalities about the eye, curling of toes, swollen joints and condition of feathering about the vent which may show evidence of diarrhea. Examine for pox lesions and external parasites.

Post-mortem Examination

To perform a thorough and satisfactory post-mortem examination the first requisites are a good light, a set of appropriate instruments and a convenient place to perform the autopsy. The instruments should consist of a set of bone forceps, knife and a pair of small scissors having one blunt and one pointed jaw. A large flat metal pan may be used to lay the

birds on to prevent the escape of fluids. With this small amount of equipment an autopsy on fowl can be conveniently performed. Live birds, especially adult turkeys, may be killed by separating the vertebrae and spinal cord with a pair of Burdizzo forceps.

The carcass should be opened without disturbing the internal organs. In searching for pathological alterations it is essential that the appearance of normal tissues and organs be kept well in mind. Often times the alterations are very slight causing some difficulty in separating them from normal tissue or organs. Through experience you soon learn to associate the various lesions with certain diseases to the extent that it soon becomes automatic.

On opening a bird for post-mortem examination the first thing noticed is the amount of fluid in the abdominal cavity. An excessive amount of fluid (ascites) in young poults is suggestive of a condition commonly called "water belly." It is usually associated with a high sodium intake. Ascites may also be found in poults exposed to creolin preparations or may be due to weakness or low vitality. In older birds an excessive amount of fluid in the abdominal cavity is suggestive of peritonitis due to various causes. An enlarged liver is indicative of several conditions such as typhoid, leucosis, erysipelas, blackhead and colibacillosis. White or greyish areas in the liver of varying size and consistency are often found in diseases such as blackhead, tuberculosis, fowl typhoid and fowl cholera. Dried shrunken discolored ova are characteristic of pullorum but may be occasionally found in chronic fowl typhoid. An enlarged spleen and kidney may again suggest typhoid, leucosis, erysipelas or colibacillosis.

Examine all abdominal and thoracic viscera for any evidence of diffuse or petechial hemorrhages. Hemorrhages are found in many septicemic infectious diseases and in bacterial intoxications. Inspect the air sacs carefully for evidence of any cloudiness or pus formation. Examine the lungs for evidence of pneumonia. They may be dark and con-

gested, suggesting fowl cholera, or they may have a parboiled appearance such as is commonly found in fowl typhoid. There may be small white nodules present in the lungs of young birds suggesting pullorum or the nodules may be green or black which would indicate aspergillosis. The sinuses and entire respiratory tract should be examined for lesions of sinusitis, coryza, laryngotracheitis or infectious bronchitis.

The alimentary canal from the mouth backward should be examined, making careful examination for lesions of Vitamin A deficiency, pox or mycosis in the mouth and esophagus. The crop should be opened and the content examined carefully for the presence of unusual material and the condition of the lining noted. Again this organ may show lesions of mycosis or trichomoniasis.

The foregoing examples are only suggestive of some of the more common findings and the list is by no means complete either as to diseases or pathological alterations.

Microscopic Examination of Intestinal Scrapings

Examination of scrapings of the intestine and ceca should be carried out as a matter of routine, principally to detect the presence of protozoa and small parasites. These scrapings should be taken from freshly killed birds since some of the protozoa are difficult to demonstrate in birds that have been dead a short time. The scrapings or smears should be taken from the duodenum, jejunum, ileum and one caecum. By this means various protozoa such as coccidia, histomonads, trichomonads and hexamita can be demonstrated if they are present.

Blood Smears

Stained blood smears and tissues can be of aid in diagnosing certain bacterial diseases. The characteristic slender curved rod of erysipelas can frequently be demonstrated in stained blood smears from birds, especially turkeys, suffering from the disease. Often times the *Pasteurella* organism can be demonstrated in stained smears from birds that

have died of cholera. Since so many bacterial organisms resemble one another so closely in morphology that they are indistinguishable, this method should not be considered diagnostic but should merely be used as an aid. The causative organism should be isolated by culture and then identified by its biochemical reactions.

Culturing

With a small amount of equipment it is possible for the practitioner to do some culture work. This bacteriological work should be kept on a practical basis. Specimens requiring animal inoculation should be forwarded to a laboratory equipped to do this work.

Frequently, during the busy season, it may be necessary to culture ten to twelve or even more birds daily. Shipping or conveying these specimens to a laboratory is inconvenient and time consuming. With the proper equipment these specimens can be cultured in a short time. Practitioners doing culture work soon learn that it is not only a necessity in diagnostic procedure but it assures them of an accurate diagnosis and gives added confidence in the diagnosis. It is soon learned that diseases are rarely constant in their manifestations and that certain pathological changes or alterations do not always accompany the disease in question.

The equipment necessary for culture work need not be elaborate nor expensive. This equipment should consist of a microscope, incubator, slides, stains, petri dishes, test tubes, wire loop, bunsen burner, apothecary scales and autoclave or pressure cooker for sterilizing glass ware and culture media. The expense of these materials aside from the microscope is negligible. Since media can be obtained in a dehydrated form from various pharmaceutical or supply houses it can be quite easily prepared. It is only necessary that this media be mixed with distilled water and sterilized.

A suitable incubator may be renovated from an obsolete five cubic foot refrigerator. Removal of the ice tray compartment in the top of the refrigerator and



Above—The equipment used by Dr. Nelson in routine culturing as a diagnostic aid.

Below—Dr. Nelson's "refrigerator" incubator.



installation of a thermostat and a 100 watt bulb to supply the heat will provide an incubator that is well insulated and will maintain a constant temperature. A thermometer should be inserted through the top so that a reading can be taken from the outside. Practitioners conducting pullorum tests will find that an incubator this size will hold approximately 3000 tubes for incubation.

With good equipment and an interest in the control of poultry diseases the veterinarian can rest assured that the flock owner will turn to him when any sign of disease is evident. By virtue of his knowledge of poultry diseases he occupies a strategic position in this regard. Poultry practice offers a remunerative and interesting outlet for veterinary service in general practice.

NOTICE: On the back of this issue will be found a colored bar. This indicates that the issue contains an annual index listing the articles of this volume.